ABSTRACT OF THE DISCLOSURE

Methods and apparatuses to maintain and propagate statistical data during circuit synthesis. At least one embodiment of the present invention maintains and propagates statistical data during and after circuit synthesis transformation operations. In one example, the signal switching activity is calculated once at the RTL level and then propagated and/or maintained at various nodes of the circuit through the process of logic synthesis. Thus, the statistical analysis of entire circuit during or after the logic synthesis is avoided. In one example, power optimization is performed during logic synthesis. A portion of the logic synthesis transformation is driven by the power consumption optimization; and, the statistical data about circuit activity maintained at the nodes of the circuit during the synthesis process is used to calculate the power consumption at various points in the process of synthesis transformation.